Description

The SX280N04T uses advanced technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

V_{DS} = 40V I_D =280A

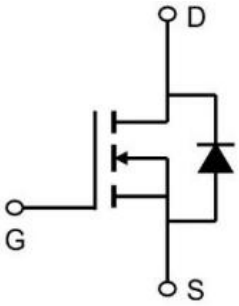
$R_{DS(ON)}$ < 1.5mΩ @ V_{GS}=10V

Application

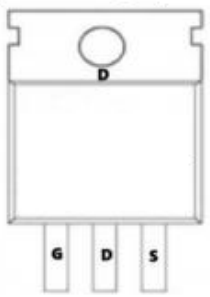
BMS

BLDC

UPS



TO-263-3L



Absolute Maximum Ratings (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Max.	Units
VDSS	Drain-Source Voltage	40	V
VGSS	Gate-Source Voltage	±20	V
ID@TC=25℃	Continuous Drain Current, VGS @ 10V1	280	A
ID@TC=100℃	Continuous Drain Current, VGS @ 10V1	200	A
IDM	Pulsed Drain Current	1120	A
EAS	Single Pulsed Avalanche Energy	818	mJ
IAS	Avalanche Current	70	A
PD@TC=25℃	Power Dissipation	230	W
RθJA	Thermal Resistance Junction-Ambient [1]	60	°C/W
RθJC	Thermal Resistance, Junction to Case	1.5	℃/W
T_J	Operating Junction Temperature Range	-55 to 150	°C
TSTG	Storage Temperature Range	-55 to 150	°C

MOSFET N-Channel Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	40	48	-	V
IDSS	Zero Gate Voltage Drain Current	V_{DS}=40V, V_{GS}=0V,	-	-	1.0	μA
IGSS	Gate to Body Leakage Current	V_{DS}=0V, V_{GS}= ±20V	-	-	±100	nA
VGS(th)	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1.0	1.8	2.5	V
RDS(on)	Static Drain-Source on-Resistance	V_{GS}= 10V, I_D=30A	-	1.2	1.5	mΩ
		V_{GS}=4.5V, I_D=20A	-	1.7	2.5	mΩ
Ciss	Input Capacitance	V_{DS}=20V, V_{GS}=0V, f=1.0MHz	-	8300	-	pF
Coss	Output Capacitance		-	1510	-	pF
Crss	Reverse Transfer Capacitance		-	130	-	pF
Q_g	Total Gate Charge	V_{DS}=20V, I_D=85A, V_{GS}= 10V	-	127	-	nC
Qgs	Gate-Source Charge		-	35	-	nC
Qgd	Gate-Drain(“Miller”) Charge		-	26	-	nC
td(on)	Turn-on Delay Time	V_{DD}=20V, I_D=85A, R_G=1.6Ω, V_{GS}=10V	-	22.5	-	ns
tr	Turn-on Rise Time		-	6.7	-	ns
td(off)	Turn-off Delay Time		-	80.3	-	ns
t_f	Turn-off Fall Time		-	26.9	-	ns
IS	Maximum Continuous Drain to Source Diode Forward Current		-	-	300	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	750	A
VSD	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S=30A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	T_J=25℃, I_F=I_S,dI/dt=100A/μs	-	100	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	163	-	nC

Note：

1、The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.

2、The data tested by pulsed , pulse width ≦300us , duty cycle ≦2%

3、The EAS data shows Max. rating . The test condition is VDD =32V,VGS =10V,L=0.1mH,IAS =70A

4、The power dissipation is limited by 150℃junction temperature

5、The data is theoretically the same as I D and I DM , in real applications , should be limited by total power dissipation.

Typical Characteristics

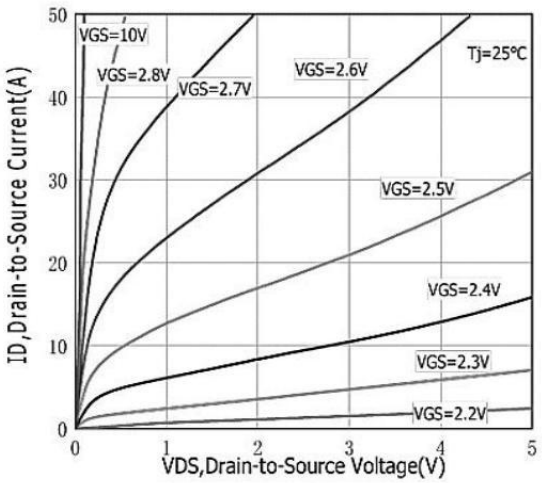


Figure.1 Typical Output Characteristics

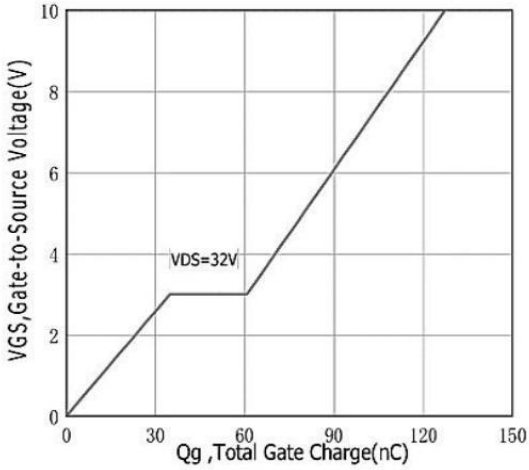


Figure.2 Typical Gate Charge vs Gate to Source Voltage

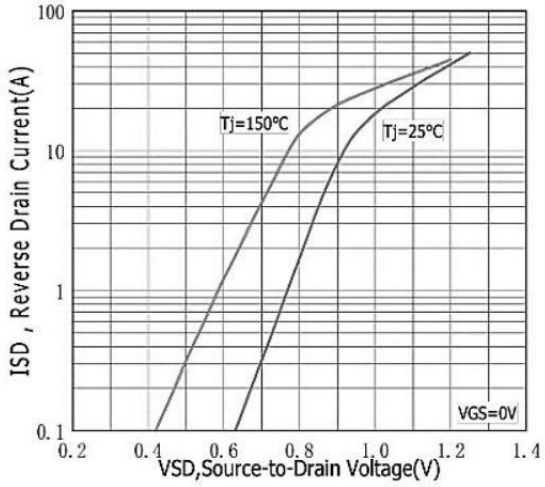


Figure.3 Typical Body Diode Transfer Characteristics

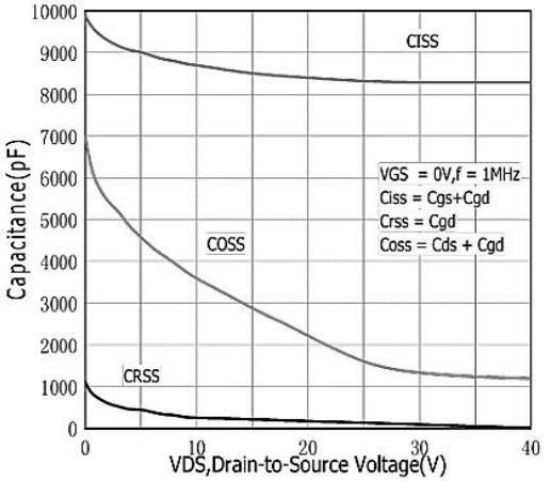


Figure 4: Body Diode Characteristics

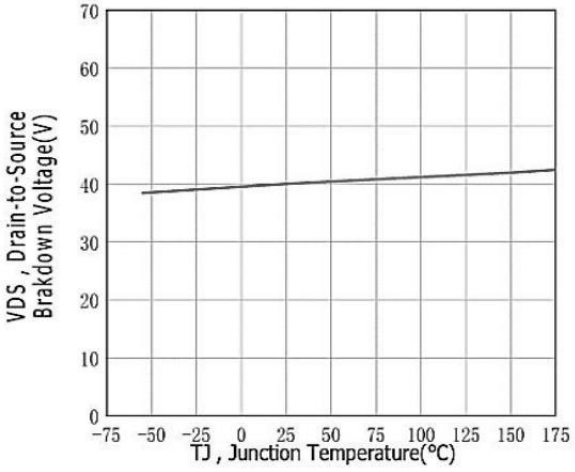


Figure.5 Typical Breakdown Voltage vs Junction Temperature

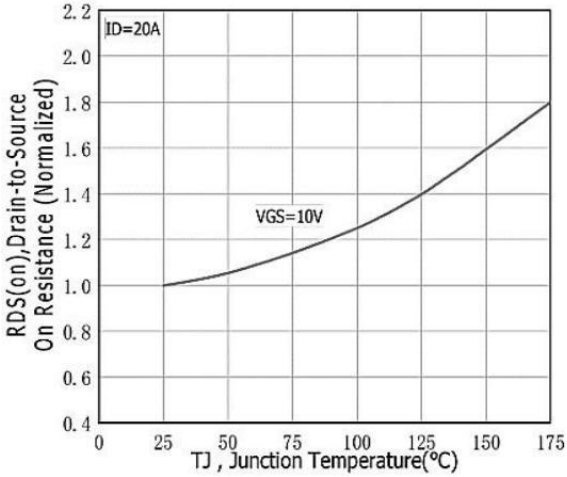


Figure 6: CapacitanceCharacteristics

Typical Characteristics

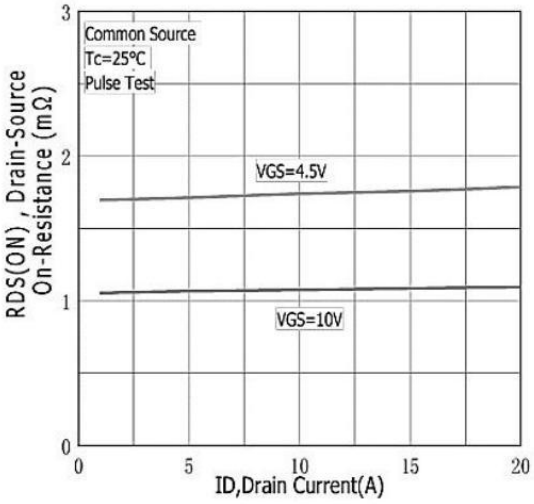


Figure.7 Typical Drain to Source ON Resistance vs Drain Current

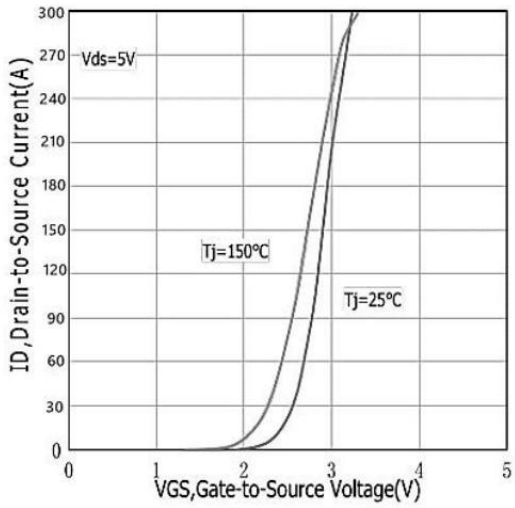


Figure.10 Typical Transfer Characteristics

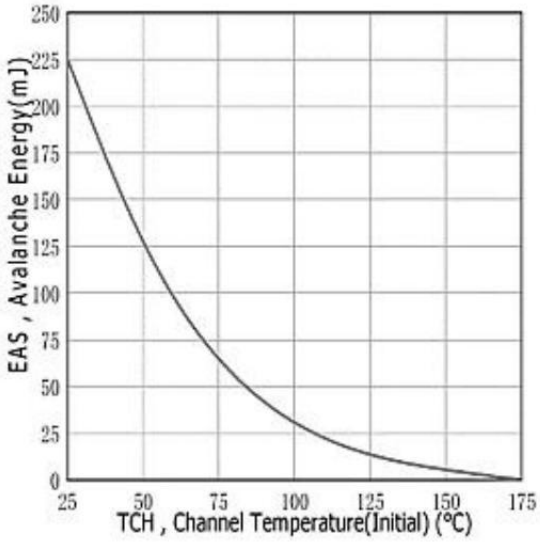


Figure.9 Maximum EAS vs Channel Temperature

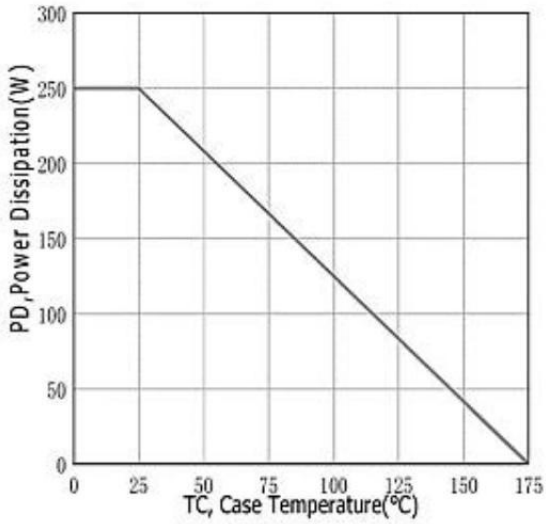


Figure.12 Maximum Power Dissipation vs Case Temperature

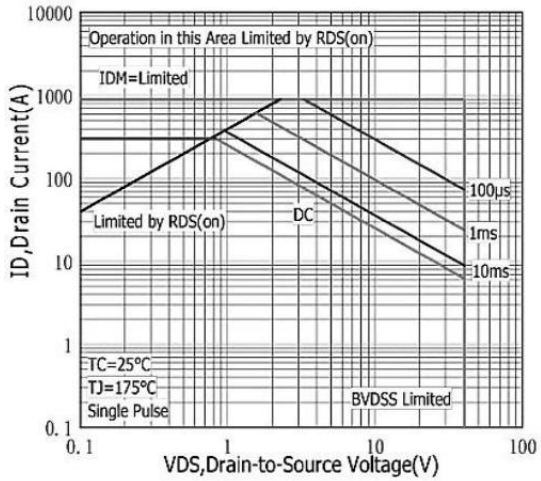


Figure 11: Maximum Safe Operating Area

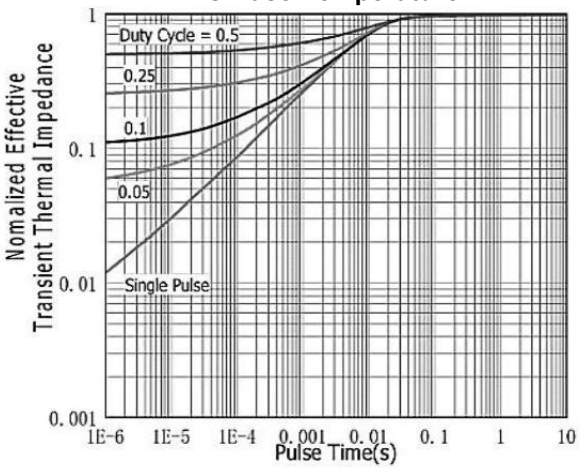
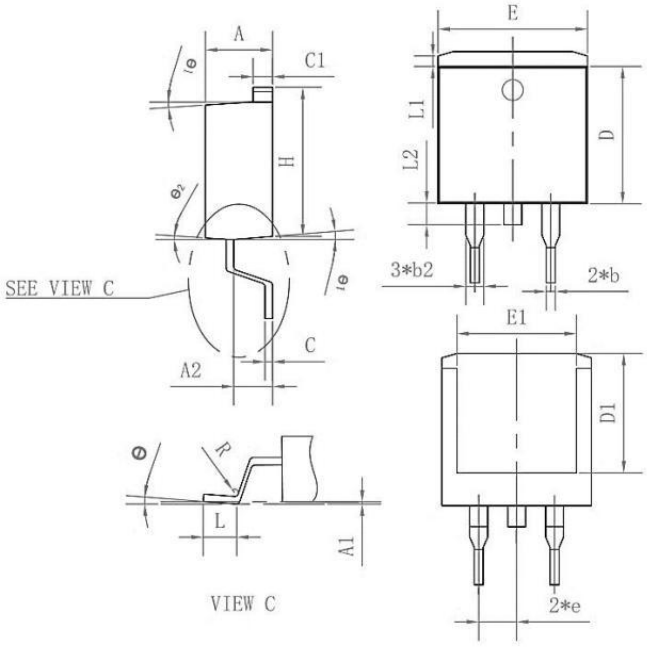


Figure.12: Maximum EffectiveTransient Thermal Impedance, Junction-to-Cas

MOSFET Package Mechanical Data-TO-263-3L-SLK



Symbol	Common		
	mm		
	Mim	Nom	Max
A	4.35	4.47	4.60
A1	0.09	0.10	0.11
A2	2.30	2.40	2.70
b	0.70	0.80	1.00
b2	1.25	1.36	1.50
C	0.45	0.50	0.65
C1	1.29	1.30	9.40
D	9.10	9.20	9.30
D1	7.90	8.00	8.10
E	9.85	10.00	10.20
E1	7.90	8.00	8.10
H	15.30	15.50	15.70
e	-	2.54	-
L	2.34	2.54	2.74
L1	1.00	1.10	1.20
L2	1.30	1.40	1.50
R	0.24	0.25	0.26
θ	0°	4°	8°
Θ1	4°	7°	10°
Θ2	0°	3°	6°

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	TO-263-3L		800